

# SEQUENCE LISTING

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Zhenya Glazov

<120> Methods of Controlling Gene Expression

<130> PB/5-31481A

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<170> PatentIn Ver. 2.1

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His Gly His Glu Glu Asp Pro Asn Gln Ile Pro Asn Asn Ile Arg Arg  
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 Gln Leu Pro Arg Ser Ile Thr Ser Ser Thr Ser Tyr Lys Arg Phe Pro  
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      35              40              45

Thr Leu Thr Lys Pro Gln Glu Glu Tyr Lys Ile Leu Val Asp Asn Ala
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Asn Asn Pro Phe Glu His Val Leu Leu Glu Lys Ser Glu Asp Gly Leu
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Leu Glu Asn Pro Gln Ile Glu Phe Gly Phe Leu Arg Gly Glu Cys Ser
          35             40             45

Leu Glu Met Ser Asp Ser Tyr Val Trp Val Glu Thr Glu Ser Gln Leu
 50             55             60

Lys Glu Leu Ala Glu Ile Leu Ala Lys Glu Gln Val Phe Ala Val Asp
 65             70             75             80

Thr Glu Gln His Ser Leu Arg Ser Phe Leu Gly Phe Thr Ala Leu Ile
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Gln Ile Ser Thr His Glu Glu Asp Phe Leu Val Asp Thr Ile Ala Leu
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His Asp Val Met Ser Ile Leu Arg Pro Val Phe Ser Asp Pro Asn Ile
115             120             125

Cys Lys Val Phe His Gly Ala Asp Asn Asp Val Ile Trp Leu Gln Arg
130             135             140

Asp Phe His Ile Tyr Val Val Asn Met Phe Asp Thr Ala Lys Ala Cys
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Glu Val Leu Ser Lys Pro Gln Arg Ser Leu Ala Tyr Leu Leu Glu Thr
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Val Cys Gly Val Ala Thr Asn Lys Leu Leu Gln Arg Glu Asp Trp Arg
180             185             190
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Ile Ser Tyr Glu Glu Lys Glu Glu Val Arg Val Leu Met Arg Gln Asp  
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Pro Lys Phe Trp Thr Tyr Arg Pro Met Thr Glu Leu Met Ile Arg Ala  
115 120 125

Ala Ala Asp Asp Val Arg Phe Leu Leu Tyr Leu Tyr His Lys Met Met  
130 135 140

Gly Lys Leu Asn Gln Arg Ser Leu Trp His Leu Ala Val Arg Gly Ala  
145 150 155 160

Leu Tyr Cys Arg Cys Leu Cys Cys Met Asn Asp Ala Asp Phe Ala Asp  
165 170 175

Trp Pro Thr Val Pro Pro Ile Pro Val Phe Leu Val Lys Val Val Tyr  
180 185 190

Ala Val Glu Thr Lys Lys Lys Arg Arg Val Thr Leu Ala Ser Ile Gly  
195 200 205

Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser  
210 215 220

Glu Asp Gln Cys Leu Glu Glu Glu Ile Leu Ser Val Leu Asp Val Pro  
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Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu  
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 35 40 45  
 Arg Leu Arg Ser Ser His Pro Leu Val Val Gly Leu Asp Val Gln Trp  
 50 55 60  
 Thr Pro Gly Gly Ser Asp Pro Pro Pro Asp Ile Leu Gln Leu Cys Val  
 65 70 75 80  
 Gly Asn Arg Cys Leu Ile Ile Gln Leu Ser His Cys Lys Arg Ile Pro  
 85 90 95  
 Glu Val Leu Arg Ser Phe Leu Glu Asp Glu Thr Ile Thr Phe Val Gly  
 100 105 110  
 Val Trp Asn Ser Gln Asp Gln Gly Lys Leu Glu Arg Phe Arg His Gln  
 115 120 125  
 Leu Glu Ile Trp Arg Leu Leu Asp Ile Arg His Tyr Leu Pro Thr Arg  
 130 135 140  
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 145 150 155 160  
 Lys Gly Val Arg Lys Asp Lys Glu Ile Cys Met Ser Asn Trp Gly Ala  
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 Arg Ser Leu Ser His Asp Gln Ile Val Gln Ala Ser Asp Asp Val Tyr  
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 Val Cys Cys Lys Leu Gly Val Lys Glu Cys Ile Trp Lys Glu Arg Ser  
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Glu Arg Leu Ile Val Thr Val Thr His Thr Pro Ser Val Ile Arg Arg
      35             40             45

Trp Ile His Ser Ile Arg Phe Val Ser Arg Leu Arg Leu Ser His Pro
      50             55             60

Leu Val Val Gly Leu Gly Val Gln Trp Thr Pro Arg Gly Ser Asp Pro
      65             70             75             80

Pro Pro Asp Ile Leu Gln Leu Cys Val Gly Thr Arg Cys Leu Ile Ile
      85             90             95

Gln Leu Ser His Cys Lys Tyr Val Pro Asp Val Leu Arg Ser Phe Leu
      100            105            110

Glu Asp Gln Thr Ile Thr Phe Val Gly Val Trp Asn Ser Gln Asp Lys
      115            120            125

Asp Lys Leu Glu Arg Phe His His Gln Leu Asp Ile Trp Arg Leu Val
      130            135            140

His Ile Arg His Tyr Leu His Pro Leu Leu Leu Ser Ser Ser Phe Glu
      145            150            155            160

Thr Ile Val Lys Val Tyr Leu Gly His Glu Gly Val Thr Lys Asp Lys
      165            170            175

Glu Leu Cys Met Ser Asn Trp Gly Ala Arg Ser Leu Ser His Asp Gln
      180            185            190

Ile Val Gln Ala Ser His Asp Val Tyr Val Cys Cys Lys Leu Gly Val
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195

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&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 13

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&lt;211&gt; 86

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 14

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&lt;212&gt; DNA

&lt;213&gt; C. elegans

&lt;400&gt; 15

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				740					745					750	
Phe	Leu	Val	Lys	Thr	Ser	Ser	His	Trp	Glu	Phe	Glu	Gly	Pro	Thr	Ile
		755					760					765			
Ile	Tyr	Cys	Pro	Ser	Arg	Lys	Met	Thr	Gln	Gln	Val	Thr	Gly	Glu	Leu
		770					775					780			
Arg	Lys	Leu	Asn	Leu	Ser	Cys	Gly	Thr	Tyr	His	Ala	Gly	Met	Ser	Phe
		785			790					795					
Ser	Thr	Arg	Lys	Asp	Ile	His	His	Arg	Phe	Val	Arg	Asp	Glu	Ile	Gln

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				805					810					815			
Cys	Val	Ile	Ala	Thr	Ile	Ala	Phe	Gly	Met	Gly	Ile	Asn	Lys	Ala	Asp		
			820					825					830				
Ile	Arg	Gln	Val	Ile	His	Tyr	Gly	Ala	Pro	Lys	Asp	Met	Glu	Ser	Tyr		
		835					840					845					
Tyr	Gln	Glu	Ile	Gly	Arg	Ala	Gly	Arg	Asp	Gly	Leu	Gln	Ser	Ser	Cys		
	850					855					860						
His	Val	Leu	Trp	Ala	Pro	Ala	Asp	Ile	Asn	Leu	Asn	Arg	His	Leu	Leu		
865					870					875					880		
Thr	Glu	Ile	Arg	Asn	Glu	Lys	Phe	Arg	Leu	Tyr	Lys	Leu	Lys	Met	Met		
				885					890					895			
Ala	Lys	Met	Glu	Lys	Tyr	Leu	His	Ser	Ser	Arg	Cys	Arg	Arg	Gln	Ile		
			900					905					910				
Ile	Leu	Ser	His	Phe	Glu	Asp	Lys	Gln	Val	Gln	Lys	Ala	Ser	Leu	Gly		
		915					920					925					
Ile	Met	Gly	Thr	Glu	Lys	Cys	Cys	Asp	Asn	Cys	Arg	Ser	Arg	Leu	Asp		
	930					935					940						
His	Cys	Tyr	Ser	Met	Asp	Asp	Ser	Glu	Asp	Thr	Ser	Trp	Asp	Phe	Gly		
945					950					955					960		
Pro	Gln	Ala	Phe	Lys	Leu	Leu	Ser	Ala	Val	Asp	Ile	Leu	Gly	Glu	Lys		
				965					970					975			
Phe	Gly	Ile	Gly	Leu	Pro	Ile	Leu	Phe	Leu	Arg	Gly	Ser	Asn	Ser	Gln		
			980					985					990				
Arg	Leu	Ala	Asp	Gln	Tyr	Arg	Arg	His	Ser	Leu	Phe	Gly	Thr	Gly	Lys		
		995					1000					1005					
Asp	Gln	Thr	Glu	Ser	Trp	Trp	Lys	Ala	Phe	Ser	Arg	Gln	Leu	Ile	Thr		
	1010					1015					1020						
Glu	Gly	Phe	Leu	Val	Glu	Val	Ser	Arg	Tyr	Asn	Lys	Phe	Met	Lys	Ile		
1025				1030					1035					1040			
Cys	Ala	Leu	Thr	Lys	Lys	Gly	Arg	Asn	Trp	Leu	His	Lys	Ala	Asn	Thr		
			1045					1050					1055				
Glu	Ser	Gln	Ser	Leu	Ile	Leu	Gln	Ala	Asn	Glu	Glu	Leu	Cys	Pro	Lys		
		1060					1065						1070				
Lys	Phe	Leu	Leu	Pro	Ser	Ser	Lys	Thr	Val	Ser	Ser	Gly	Thr	Lys	Glu		
	1075						1080					1085					
His	Cys	Tyr	Asn	Gln	Val	Pro	Val	Glu	Leu	Ser	Thr	Glu	Lys	Lys	Ser		
	1090				1095						1100						
Asn	Leu	Glu	Lys	Leu	Tyr	Ser	Tyr	Lys	Pro	Cys	Asp	Lys	Ile	Ser	Ser		



1410

1415

1420

Thr Lys Arg Gly Gly Leu Phe Ser  
1425 1430

&lt;210&gt; 19

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:  
Oligonucleotide

&lt;400&gt; 19

cgacatgatc tgatacatcg ttatgccatt

30

&lt;210&gt; 20

&lt;211&gt; 29

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:  
Oligonucleotide

&lt;400&gt; 20

cattttataa taacgctgcg gacatctac

29

&lt;210&gt; 21

&lt;211&gt; 1041

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 21

atgtttgagt ttttcgcttc aggaggaagg tcgccgacac aagaagctaa tgagccacca 60  
gttccgattt acattgtgac ggatccggtt caacttcctg ctgatttcct aaacccttct 120  
cctgaaaaga aattgggtat cggttttgac tgtgagggtg ttgacctctg ccgacatggg 180  
aaactttgta tcatgcagat tgcattctct aatgcaatat acttggttga tgtcatcgaa 240  
ggtggagagg tgattatgaa agcgtgtaag cctgcactcg agtctaatta catcacgaaa 300  
gttattcacg attgcaagcg tgacagtga gctctatact tccagtttgg gataagattg 360  
cacaatgttg tggacactca gattgcttat tctctgattg aagaacaaga agggcggagg 420  
agacctctag atgattacat atcgtttggt tcaactcctg ctgatccacg ttactgcggg 480  
atatacctatg aagagaaaaga agaagttcga gttctcatgc gccaggaccc aaagttttgg 540  
acatacaggc ctatgactga gctcatgatc cgcgcagctg ctgatgatgt ccgcttcctt 600  
ctgtatctct atcacaaaaat gatgggaaag ctaaatcagc ggtcactatg gcatcttgca 660  
gttcgtggtg ctttgtactg tcggtgtctc tgctgcatga atgatgctga ttttgctgat 720  
tggccaaccg ttcctccaat tccagttttc ctcgttaagg tcgtatatgc tgtagagaca 780  
aagaaaaaaa gacgggtgac attagcttcg attgggttac tgattgtagt tggactttta 840  
aatgtggcag ataacctgaa gtcagaagat caatgtcttg aagaagagat cctgtcagtg 900  
cttgatgttc caccaggaaa gatgggacgt gtgattggaa ggaaaggagc atcgatcctc 960  
gccattaagg aagcttgcaa cgcggaaatt ctaattggag gggcaaaggg tccacctgat 1020  
aaggtttagtc ttattccata g 1041

<210> 22  
 <211> 346  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 22

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Asn	Glu	Pro	Pro	Val	Pro	Ile	Tyr	Ile	Val	Thr	Asp	Pro	Phe	Gln	Leu
			20					25					30		
Pro	Ala	Asp	Phe	Leu	Asn	Pro	Ser	Pro	Glu	Lys	Lys	Leu	Val	Ile	Gly
		35					40					45			
Phe	Asp	Cys	Glu	Gly	Val	Asp	Leu	Cys	Arg	His	Gly	Lys	Leu	Cys	Ile
	50					55					60				
Met	Gln	Ile	Ala	Phe	Ser	Asn	Ala	Ile	Tyr	Leu	Val	Asp	Val	Ile	Glu
65					70				75						80
Gly	Gly	Glu	Val	Ile	Met	Lys	Ala	Cys	Lys	Pro	Ala	Leu	Glu	Ser	Asn
				85					90					95	
Tyr	Ile	Thr	Lys	Val	Ile	His	Asp	Cys	Lys	Arg	Asp	Ser	Glu	Ala	Leu
			100					105					110		
Tyr	Phe	Gln	Phe	Gly	Ile	Arg	Leu	His	Asn	Val	Val	Asp	Thr	Gln	Ile
		115					120					125			
Ala	Tyr	Ser	Leu	Ile	Glu	Glu	Gln	Glu	Gly	Arg	Arg	Arg	Pro	Leu	Asp
	130					135					140				
Asp	Tyr	Ile	Ser	Phe	Val	Ser	Leu	Leu	Ala	Asp	Pro	Arg	Tyr	Cys	Gly
145					150					155					160
Ile	Ser	Tyr	Glu	Glu	Lys	Glu	Glu	Val	Arg	Val	Leu	Met	Arg	Gln	Asp
				165					170					175	
Pro	Lys	Phe	Trp	Thr	Tyr	Arg	Pro	Met	Thr	Glu	Leu	Met	Ile	Arg	Ala
			180					185					190		
Ala	Ala	Asp	Asp	Val	Arg	Phe	Leu	Leu	Tyr	Leu	Tyr	His	Lys	Met	Met
		195					200					205			
Gly	Lys	Leu	Asn	Gln	Arg	Ser	Leu	Trp	His	Leu	Ala	Val	Arg	Gly	Ala
	210					215					220				
Leu	Tyr	Cys	Arg	Cys	Leu	Cys	Cys	Met	Asn	Asp	Ala	Asp	Phe	Ala	Asp
225					230					235					240
Trp	Pro	Thr	Val	Pro	Pro	Ile	Pro	Val	Phe	Leu	Val	Lys	Val	Val	Tyr
				245					250					255	
Ala	Val	Glu	Thr	Lys	Lys	Lys	Arg	Arg	Val	Thr	Leu	Ala	Ser	Ile	Gly
			260					265					270		

Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser  
 275 280 285  
 Glu Asp Gln Cys Leu Glu Glu Glu Ile Leu Ser Val Leu Asp Val Pro  
 290 295 300  
 Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu  
 305 310 315 320  
 Ala Ile Lys Glu Ala Cys Asn Ala Glu Ile Leu Ile Gly Gly Ala Lys  
 325 330 335  
 Gly Pro Pro Asp Lys Val Ser Leu Ile Pro  
 340 345

<210> 23  
 <211> 1049  
 <212> DNA  
 <213> Arabidopsis thaliana

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 atttctcccg ttcttcttct tcttcttct ctgctgctcc gaccgtacaa gctacaacct 180  
 ccgtccatgg ccacgaggag gatccaaatc aaatcccca taatatccgt cgccaattgc 240  
 ctggttccat cacttcttct acatcttata aacgatttcc tctctcccg tgccgagcta 300  
 ggaattttcc agcaatgagg tttggtggtta ggattttgta tagcaagact gctactgagg 360  
 ttgataagcg agcaatgcag cttattaaag ttcttgatac caagagagat gaatctggaa 420  
 tagcttttgt tggcttgat attgagtga gaccaagttt tagaaaaggt gttctcccg 480  
 ggaagggtgc gactgtccag atatgtgat atagtaatta ttgtgatgtt atgcatattt 540  
 ttcattctgg tatccctcaa agtctccaac atcttattga agattcaaca cttgtaaagg 600  
 taggtattgg aattgatggt gactctgtga agcttttcca tgactatgga gttagtatca 660  
 aagatgttga ggatctttca gatttagcca accaaaaaat tgggtggagat aaaaaatggg 720  
 gccttgccct actaactgag acacttggtt gcaaagagct cctgaagcca aacagaatca 780  
 ggcttgggaa ctgggagttt tctctctgt caaagcagca gttacaatac gcagcaacgg 840  
 atgcttatgc ttcattggcat ctttacaagg ttcttaagga ctttctgat gctgtcagtg 900  
 gctcataacg tgaaggagga agcttaaagg ttagcctata accccaagag ttagcatcaa 960  
 atgatatgat acacctaata tagtcaagta gatgcaattc ttgtgaatat tgtatctagt 1020  
 tctggtccct ttaaccgtcc agaaactag 1049

<210> 24  
 <211> 288  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 24  
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 1 5 10 15  
 Leu Ala Ile Asp Ala Ile Glu Ala Ser Tyr Asn Phe Ser Arg Ser Ser  
 20 25 30  
 Ser Ser Ser Ser Ser Ala Ala Pro Thr Val Gln Ala Thr Thr Ser Val  
 35 40 45



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His Gly His Glu Glu Asp Pro Asn Gln Ile Pro Asn Asn Ile Arg Arg  
50 55 60

Gln Leu Pro Arg Ser Ile Thr Ser Ser Thr Ser Tyr Lys Arg Phe Pro  
65 70 75 80

Leu Ser Arg Cys Arg Ala Arg Asn Phe Pro Ala Met Arg Phe Gly Gly  
85 90 95

Arg Ile Leu Tyr Ser Lys Thr Ala Thr Glu Val Asp Lys Arg Ala Met  
100 105 110

Gln Leu Ile Lys Val Leu Asp Thr Lys Arg Asp Glu Ser Gly Ile Ala  
115 120 125

Phe Val Gly Leu Asp Ile Glu Trp Arg Pro Ser Phe Arg Lys Gly Val  
130 135 140

Leu Pro Gly Lys Val Ala Thr Val Gln Ile Cys Val Asp Ser Asn Tyr  
145 150 155 160

Cys Asp Val Met His Ile Phe His Ser Gly Ile Pro Gln Ser Leu Gln  
165 170 175

His Leu Ile Glu Asp Ser Thr Leu Val Lys Val Gly Ile Gly Ile Asp  
180 185 190

Gly Asp Ser Val Lys Leu Phe His Asp Tyr Gly Val Ser Ile Lys Asp  
195 200 205

Val Glu Asp Leu Ser Asp Leu Ala Asn Gln Lys Ile Gly Gly Asp Lys  
210 215 220

Lys Trp Gly Leu Ala Ser Leu Thr Glu Thr Leu Val Cys Lys Glu Leu  
225 230 235 240

Leu Lys Pro Asn Arg Ile Arg Leu Gly Asn Trp Glu Phe Tyr Pro Leu  
245 250 255

Ser Lys Gln Gln Leu Gln Tyr Ala Ala Thr Asp Ala Tyr Ala Ser Trp  
260 265 270

His Leu Tyr Lys Val Leu Lys Asp Leu Pro Asp Ala Val Ser Gly Ser  
275 280 285

<210> 25  
<211> 22  
<212> DNA  
<213> Description of Artificial Sequence:  
Oligonucleotide

<400> 25  
ttcggaaacca ccatcaaaca gg

<210> 26  
 <211> 22  
 <212> DNA  
 <213> Description of Artificial Sequence:  
         Oligonucleotide

<400> 26  
 ttgctgcaac tctctcaggg cc 22

<210> 27  
 <211> 21  
 <212> DNA  
 <213> Description of Artificial Sequence:  
         Oligonucleotide

<400> 27  
 tcagctgttg cccgtctcac t 21

<210> 28  
 <211> 16  
 <212> DNA  
 <213> Description of Artificial Sequence:  
         Oligonucleotide  
         Other n=a, c, g, or t

<400> 28  
 wgtgnagwan canaga 16

<210> 29  
 <211> 27  
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         Oligonucleotide

<400> 29  
 gctccgcca cataattcaa acaacac 27

<210> 30  
 <211> 22  
 <212> DNA  
 <213> Description of Artificial Sequence:  
         Oligonucleotide

<400> 30  
 ttcgaaaaca ttacctccga tc 22

<210> 31  
 <211> 25  
 <212> DNA  
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         Oligonucleotide

<400> 31  
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<210> 32  
<211> 25  
<212> DNA  
<213> Description of Artificial Sequence:  
Oligonucleotide

<400> 32  
atgtcatcgt caaattggat cgacg 25

<210> 33  
<211> 27  
<212> DNA  
<213> Description of Artificial Sequence:  
Oligonucleotide

<400> 33  
cgcttatcaa cctcagtagc agtcttg 27

<210> 34  
<211> 24  
<212> DNA  
<213> Description of Artificial Sequence:  
Oligonucleotide

<400> 34  
ttatgagcca ctgacagcat cagg 24

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